# Dungflies (Diptera: Scathophagidae) collected by the Swedish-Russian tundra ecology expedition '94, with the description of two new species; *Nanna indotatum* and *Cochliarium sibiricum*

Engelmark, R.: Dungflies (Diptera: Scathophagidae) collected by the Swedish-Russian tundra ecology expedition '94, with the description of two new species; *Nanna indotatum* and *Cochliarium sibiricum.* **[Kolvflugor (Diptera: Scathophagidae) insamlade av the Swedish-Russian tundra ecology expedition '94, med beskrivning av två nya arter; *Nanna indotatum* och *Cochliarium sibiricum.*]** – Ent. Tidskr. 120 (4): 157-167. Lund, Sweden 1999. ISSN 0013-886x.

The material of the family Scathophagidae collected by he Swedish-Russian tundra ecology expedition '94 at study sites along the Russian Arctic coast is presented. 565 individuals belonging to 20 species are identified. Two species (*Nanna indotatum* and *Cochliarium sibiricum*) are new to science and described below. One species, *Huckettia nearctica* Vockeroth, is new to the Palaearctic region. *Allomyella crinipes* (Ringdahl) is new to Russia and *Microposopa lineata* (Zetterstedt) is new to Siberia. The male genitalia of four Arctic *Scathophaga* species are illustrated.

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## Introduction

In the summer of 1994 scientists from Russia and Sweden travelled along the Eurasian Arctic coast, examining a number of sites as part of a broad ecological research program. The sampling sites are situated in different subzones within the tundra ecosystem (Fig. 1), as described in more detail by Goryachkin et al. (1994). The expedition planning and research program, as well as some results, are presented in Grönlund & Melander (1995).

Part of the project entailed the collecting of insects and other tundra-living arthropods. The sampling program was carried out by Sven-Axel Bengtson during the second leg; sites 11 to 17 between 4/7-8/8 and by Christer Hansson during leg 3; sites 19 (10) to 27 (1) between 8/8-1/9. Insects were mainly collected with traps (pit-fall traps and yellow trays). Window traps and sweep nets could rarely be used due to hard winds (Bengtson 1995). The material was preserved in alcohol.

In 1998 I was asked by Hugo Andersson to examine the expedition's material of the family Scathophagidae. The material was already sorted, and partly mounted and identified by him. All specimens considered difficult to examine in alcohol were mounted on pins. The collection is in a rather good state of preservation, although pinned specimens have lost some colour and the wings are wrinkled, as a result of the alcohol preservation, but it has been possible to identify them all.

The Scathophagidae is a rather small family with about 200 Palaearctic species. The distribution is mainly northern, most species living in the North Boreal and in the South Arctic zone, the diversity declines with latitude from these regions. Most species are not restricted to a particu-

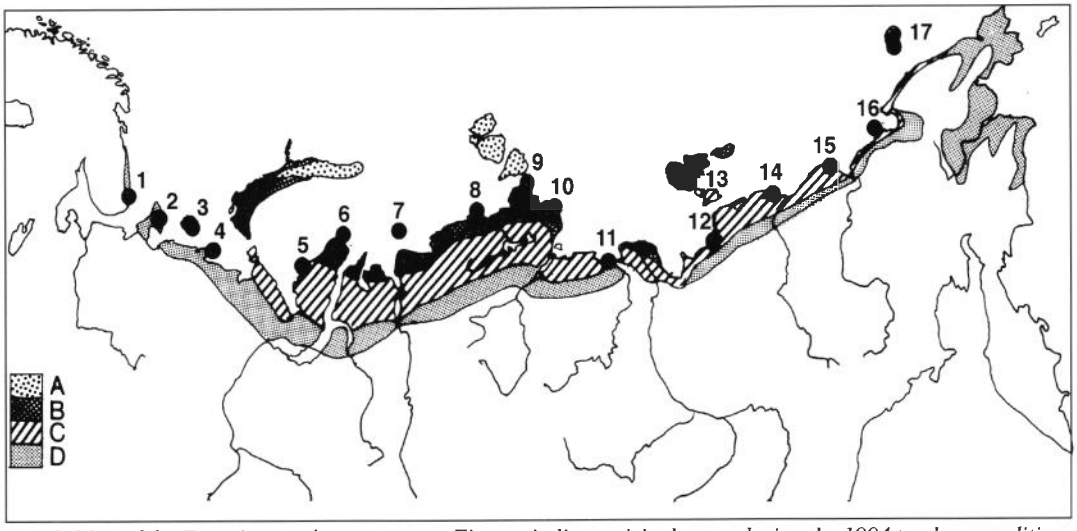


*Fig. 1. Map of the Eurasian tundra ecosystem. Figures indicate visited areas during the 1994 tundra expedition.*

*Karta över det eurasiatiska tundraekosystemet. Siffrorna anger de besökta lokalerna under expeditionen 1994.*

lar latitudinal zone but more to intrazonal environments like river beds, fens and lake shores.

The ecology is known only for a few of the species. The adults of at least the larger species are carnivorous and predate upon other small flies. Most of the larvae live on a variety of plant species, many as leaf-miners. The genus *Scathophaga*, however, feeds on dung, decaying seaweed and carrion.

## Material

A total of 565 specimens were collected, and a total of 20 species were identified (Tab. 1).This is a low species diversity, considering the large number of specimens in the samples. The genus *Scathophaga* constitutes 95% of the total, with two species, *S. furcata* and *S. varipes*, making up 75% of the material. Five sampling sites gave no dungfly catch. Sites 3 (173) and 5 (146) gave the highest number of specimens, but the highest species diversity, with 6 species, came from sites 2, 4 and 14.The reasons for this could be manyfold: collection by traps often results in large numbers of those species which are particularly attracted to the trap, the short time for collecting (one or two days per site), the habitat variation at the sites, weather is extremely important and despite an arctic distribution most of the flies are dependent on sun for activity, and in bad weather you can not expect a good yield. Nevertheless, the collection is of great interest since the present knowledge of the family in the region is extremely poor. The specimen rich taxa are certainly common and of importance for decomposition of organic matter in the tundra ecosystem. Two species were new to science (*Nanna indotatum* and *Cochliarium sibiricum* ) and will be described below. A further two species were previously unreported from Siberia.

## Research history remarks

The Scandinavian arctic Scathophagidae species were already fairly well known from Zetterstedt's works "Insecta Lapponica 1838-40" and "Diptera Scandinaviae 1842-60". With the increasing interest in the Arctic towards the end of the last century, scientific expeditions increased the knowledge of arctic plant and animal life considerably. This is also true where insects are concerned. Most important for Siberia were the Nordenskjöld expeditions 1875-80 (Liljequist 1993).

*Tab. 1. List of species and specimens of Scathophagidae collected during the 1994 tundra expedition. Note that localities 1-10 (except for locality 7) were visited both on the eastward route and on the way back. The following localities in Table 1 are therefore given two numbers in several publications: 2 (26), 3 (25), 4 (24), 5 (23), 6 (22) and 9 (20). x indicates that the species is previously known from this area. - indicates that no specimens were collected during the expedition.*

*Förteckning över arter och antal individer av dyngflugor insamlade under tundraexpeditionen 1994. Lokalerna 1-10 (utom lokal 7) besöktes både på vägen österut och på återvägen. Följande lokaler i tabellen har därför två nummer i flera publikationer: 2 (26), 3 (25), 4 (24), 5 (23), 6 (22) och 9 (20).*

| SPECIES / SITE / SUBZONE | Swe-den | 2 ST | 3 TT | 4 TT | 5 TT | 6 AT | 9 AT | 11 AT | 12 AT | 14 AT | 15 TT | 16 TT | 17 AT | Ala-ska | Σ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cordilurina fuscipes* (Zett.) | x | 1 | - | - | - | - | - | - | - | - | - | - | - | x | 1 |
| *Okeniella caudata* (Zett.) | x | 1 | - | 1 | - | - | - | - | - | - | - | - | - | - | 2 |
| *Scathophaga furcata* (Say) | x | 68 | 128 | 4 | 23 | - | - | - | - | - | - | - | - | x | 223 |
| *S. incola* (Becker) | x | 1 | - | - | - | - | - | - | - | - | - | - | - | x | 1 |
| *S. nigripalpis* (Becker) | - | 1 | - | - | - | - | - | - | - | - | - | - | - | x | 1 |
| *S. suilla* (Fabricius) | x | 17 | - | - | - | - | - | - | - | - | - | - | - | x | 17 |
| *S. obscurinervis* (Becker) | x | - | 33 | 4 | 2 | - | - | - | - | - | - | - | - | x | 39 |
| *S. litorea* (Fall.) | x | - | 11 | 4 | - | - | - | - | - | - | - | - | - | - | 15 |
| *S. varipes* (Holmgr.) | - | - | 1 | 61 | 76 | - | 1 | - | 59 | - | - | - | - | x | 197 |
| *Microposopa lineata* (Zett.) | x | - | - | 1 | - | - | - | - | - | - | - | - | - | x | 1 |
| *Scathophaga cordylurina* (Holmgr.) | - | - | - | - | 45 | - | - | - | 1 | - | - | - | - | - | 46 |
| *S.multisetosa* (Holmgr.) | - | - | - | - | - | 3 | - | - | - | - | - | - | - | x | 3 |
| *Ernoneura argus* (Zett.) | x | - | - | - | - | - | - | 2 | - | - | - | - | - | x | 2 |
| *Allomyella frigida* (Holmgr.) | x | - | - | - | - | - | - | - | 1 | 4 | 2 | - | - | x | 7 |
| *Lasioscelus immunda* (Zett.) | x | - | - | - | - | - | - | - | - | 1 | - | - | - | x | 1 |
| *Pleurochaetella simplicipes* (Becker) | x | - | - | - | - | - | - | - | - | 2 | - | - | - | x | 2 |
| *Allomyella crinipes* (Ringdahl) | x | - | - | - | - | - | - | - | - | 1 | - | - | - | Y.T. | 1 |
| *Huckettia nearctica* Vockeroth | - | - | - | - | - | - | - | - | - | 2 | - | - | - | x | 2 |
| *Nanna indotatum* n.sp. | - | - | - | - | - | - | - | - | - | - | - | 2 | - | - | 2 |
| *Cochliarium sibiricum* n.sp. | - | - | - | - | - | - | - | - | - | 1 | - | - | 1 | - | 2 |
| number of specimens per site | | 89 | 173 | 75 | 146 | 3 | 1 | 2 | 61 | 10 | 2 | 2 | 1 | | 565 |
| number of species per site | | 6 | 4 | 6 | 4 | 1 | 1 | 1 | 3 | 6 | 1 | 1 | 1 | | |

ST = Southern Tundra, TT = Typical Tundra, AT = Arctic Tundra, Y.T. = Yukon Territory, Canada

A number of Siberian species were described by August Emil Holmgren (1883) collected at Nowaya Zemlya and Waigatch. Becker (1897) described the Diptera material collected by Georg Jacobson at Nowaya Zemlya 1896, in addition to the collections brought to Helsinki by John Sahlberg 1876 and by E. Bergroth 1877 from the river valleys of Jenisej, Ob and Irtysch (Becker 1900).

## Taxonomic remarks

A checklist of the Palaearctic Scathophagidae species was published by Gorodkov (1986), and one of the Nearctic species by Vockeroth (1965).

The species occurring in Fennoscandia are treated by Hackman (1956), including drawings of the male genitalia. The Scathophagidae of the European part of Russia is treated by Gorodkov (1988). The key of the Palaearctic species by Sack (1937), which covers most of the east Siberian species, is unfortunately out of date.

Since I have not seen any published illustrations of the genitalia of some of the Siberian *Scathophaga* species described by Holmgren, and to verify my opinion of the species, I have made drawings of the male genitalia of those

*Fig. 2. The site at the Kanin Peninsula (site 2) was an inland locality (visited August 29 to 30), as opposed to most other tundra expedition sites - which were situated along the coast. The inland location presented a shrubby, knee-high vegetation (e.g.* ***Salix*** *spp., and many species of herbs) quite unlike the seashore localities, where the vegetation was ankle-high with few species. Six species of dungflies, with altogether 89 specimens, were caught at this locality. Photo: Christer Hansson.*

*Till skillnad från de flesta andra lokaler som besöktes under tundraexpeditionen, var Kaninhalvön (lokal 2) en inlandslokal (besöktes 29-30 augusti) - de flesta andra lokalerna låg längs kusten. Vegetationen var buskartad och knähög med* ***Salix*** *spp. och många arter örter, helt olik vegetationen på kustlokalerna, som var ankelhög och relativt artfattig. Sex arter kolvflugor, totalt 89 exemplar, samlades på denna lokal.*

species (Fig. 4). They are not drawn from type material but from specimens in the presently investigated collection. The species have been compared with Holmgrens type collection in the Swedish Museum of Natural History in Stockholm with respect to external characters. Similarly, the male terminalia of *S. nigripalpis* (Becker) are illustrated, as I know this species only through literature. All four species belong, acording to the genital morphology, to different species groups within the genus *Scathophaga*.

In a generic key for Nearctic diptera, Vockeroth (1987) proposed a new genus, *Huckettia*, for the species *nearctica*. The name was validated (Vockeroth 1995). In the Scandinavian mountains there is a *Huckettia lacteipennis* described by Ringdahl (1920) from the Abisko area which is closely related to but not conspecific with *H. nearctica*.

*Allomyella frigida,* described by Holmgren 1880 from Nowaya Zemlya, is reported from Fennoscandia as *Microprosopa portenkoi* Stackelberg 1952 by Hackman (1956). An investigation of the type material of *A. portenkoi* showed that it is a good species, closely related to, but well separated from *A. frigida*. The illustrations in Stackelberg 1952 and Hackman 1956 of the male fifth sternite (St 5) of the two species point out the differences.

*Microprosopa varitibia* (Becker 1898) is described from a female collected in Nowaya Zemlya, and it is most probably conspecific with *A. frigida* according to an investigation of the holotype. However, I have not seen the female of *A. portenkoi*.

*Fig. 3. The Chelyuskin Peninsula (site 9) is the northernmost point of the Eurasian mainland (visited August 13 to 14). The northern location makes the climate very harsh, during the first day there was snow and during the night there was frost and the water in the traps was frozen in the morning. Only one specimen (**Scathophaga varipes**) of dungfly was collected at this locality. Photo: Christer Hansson.*

*Chelyuskinhalvön (lokal 9) är den nordligaste punkten på det eurasiatiska fastlandet (besöktes 13-14 augusti). Det nordliga läget ger ett kallt klimat, första dagen snöade det och under natten var det frost så att vattnet i fällorna frös till is. Endast ett exemplar av kolvflugor (**Scathophaga varipes**) samlades på denna lokal.*

**Distribution remarks**

All the sampling sites are within the Tundra biogeographical zone (Fig. 1) but within different subzones according to the Russian established system (Chernov 1985). For comparison with Fennoscandian alpine systems see Wielgolaski (1997). The material can be separated into different distribution types:

•Arctic species rarely found south of the tree line (euarctic and hemiarctic species)
*Allomyella crinipes* (Ringd.)
*A. frigida* (Holmgr.)
*Huckettia nearctica* Vockeroth
*Microprosopa lineata* (Zett.)
*Scathophaga cordylurina* (Holmgr.)
*S. multisetosa* (Holmgr.)
*S. nigripalpis* (Beck.)
*S. obscurinervis* (Beck.)
*S. varipes* (Holmgr.)
*Pleurochaetella simplicipes* (Beck.)

*Microprosopa lineata* Zett. and *Pleurochaetella simplicipes* Beck. have their main distribution in Scandinavia in the low alpine and subalpine belts, and are better called hypoarctic. Maybe that this is true also concerning *Scathophaga nigripalpis* Beck. The American distribution is mapped in Vockeroth (1958).

•North boreal and arctic distribution
*Cordilurina fuscipes* (Zett.)
*Ernoneura argus* (Zett.)
*Lasioscelus immunda* (Zett.)
*Okeniella caudata* (Zett.)
*Scathophaga incola* (Beck.)

•Atlantic littoral species
*Scathophaga litorea* (Fall.)

Only two *Scathophaga* species are known to live in decaying seaweed in the Atlantic littoral zone, *S. litorea* (Fall.) and *S. calida* (Haliday) both reaching the shores of Barents Sea (Backlund 1945, Nelson 1998). Further west along the coast of the Arctic ocean there are no reports of littoral species, but in the Pacific littoral zone, along the North American coast there is a great diversity of *Scathophaga* species. *Scathophaga litorea* (Fall.) belongs to the amphiatlantic species occurring on both sides of the Atlantic ocean.

•Widely distributed in the Northern Hemisphere
*Scathophaga furcata* (Say)
*S. suilla* (Fabr.)

*S. furcata* is distributed from Italy to Svalbard and from Mexico to Alaska and is very common in the Tundra zone. *S. suilla* is slightly more restricted to temperate and mountainous areas and is rare above the Southern Tundra subzone.

**Zoogeographical notes**

The importance of Beringia as an unglaciated refugium for arctic biota during the Pleistocene glacial periods has been generally accepted since Erik Hultén´s famous demonstration of present distribution of arctic and boreal plants (1937). The bilateral spread from those refugia in interglacial periods explains a number of, if not all, biogeographic traits. For example, the high number of Holarctic species among arctic biota and a decreasing species diversity from west to east in North America and east to west in arctic Eurasia. Of the Scathophagidae material here, no less than 16 species (80%) are also distributed in North America. Only *Scathophaga cordylurina*, and *Okeniella caudata* have not, as far as known, colonized North America. Of the total number of species 13 (65%) are also members of the Scandinavian fauna. Why some arctic species have not reached Scandinavia may have different explanations, for instance low capacity for dispersal or lack of suitable habitats in the more Atlantic regions. One probably important factor is that in northern Russia today

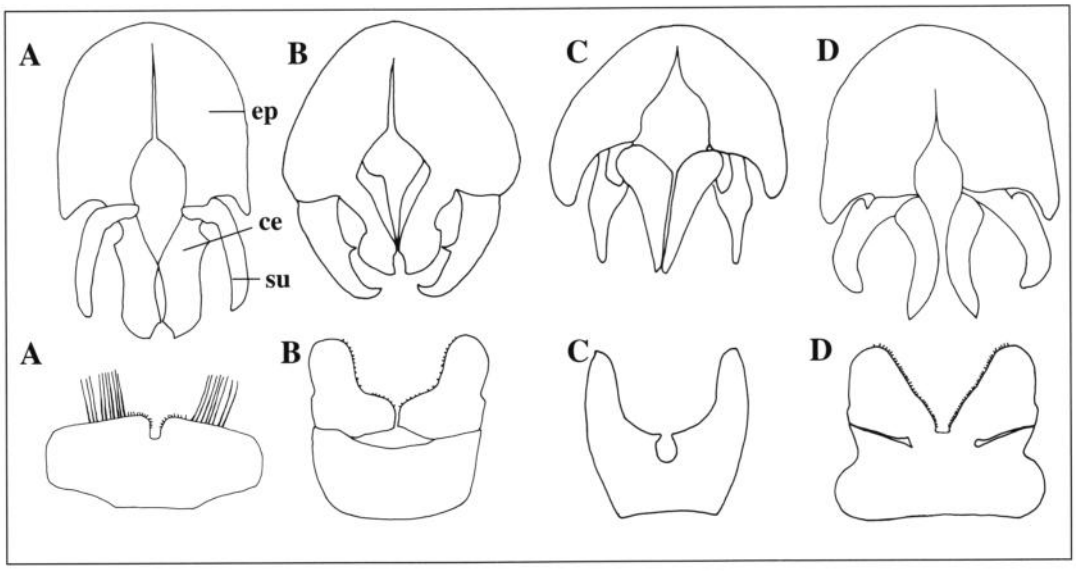


*Fig. 4. Male terminalia of* ***Scathophaga cordilurina*** *(A),* ***S. multisetosa*** *(B),* ***S. nigripalpis*** *(C) and* ***S. varipes*** *(D). Upper row teminalia from behind showing epandrium (ep), cerci (ce) and surstyli (su). Lower row ventral lamella.*

*Hangenitalier av* ***Scathophaga cordilurina*** *(A),* ***S. multisetosa*** *(B),* ***S. nigripalpis*** *(C) och* ***S. varipes*** *(D). Övre raden visar bakkroppsspetsen sedd bakifrån med epandrium, cerci och surstyli. Undre raden visar ventral lamella.*

there is only a narrow coastal strip of Southern Tundra west of the Yugorski Peninsula. During the Boreal period the tree line had advanced further north. Birch wood dated to 8000-9000 BP is found up to 200 km north of the present tree line. The spruce tree line reached the coast at Pechora Bay in the Atlantic periods (Khotinskiy 1984). The same is true for the northern shore of the Kola peninsula, which made an effective barrier to the westward spread of true arctic biota. The *Scathophaga* species in the material which are not present in Scandinavia (*S. cordylurina*, *S. multisetosa* and *S. varipes*) are all distributed westward to Nowaya Zemlya and Vaigatch, with *S. nigripalpis* reaching the Kanin peninsula. Some arctic species have been thought to have a discontinuous distribution, occurring in the Fennoscandian mountains and in arctic North America. Three of them, however, were collected in East Siberia during the expedition and can now be assumed to have a continuous circumpolar distribution. *Allomyella crinipes* (Ringd.) was previously only known from northern Sweden and from Alaska. *A. frigida* (Holmgr.) was only recorded from the type site (Nowaya Zemlya) and North America but was collected at three sites (12, 14 and 15). *Microprosopa lineata* (Zett.) was restricted to North Fennoscandia including the Kola peninsula and North America, but it has now been found at Pechora Bay. The present new records indicate that further investigations may fill the still existing distribution gaps.

The boreal species occupied a more or less unbroken taiga between East Sibiria and Scandinavia. Furthermore, arctic as well as boreal biota may have survived the glacial periods in refugia south of the Northwest Eurasian ice sheet. However, the gradual deglaciation, and at least periodically dramatic climatic ameliorations, reduced the availability of suitable habitats for cold-adapted arctic biota to expand into, beyond their existing distributions. The more warmth-tolerant boreal biota found it easier to find habitats and expand northwards.

Insects, in contrast to plants and mammals, show few signs of speciation in the Glacial-Interglacial time sequence (Coope 1978). The fossil evidences of species stability are quite convincing with respect to Coleoptera, and there is no contradiction in accepting the same for Diptera. That means that during the Pleistocene climatic oscillations the arctic species must have continuously changed their distibution in order to find suitable living environments. Consequently, the present restricted anomalous distribution patterns of some insect species must be explained in terms of a long dynamic history, rather than genetic isolation.

Similarly no pleistocene extinction is noticed amongst the arctic beetles (Elias 1994). However, insects depending on the megafauna (i.e. parasitic and specialised coprophilous species) could be expected to have followed their hosts into extinction. The obviously higher productivity of the Pleistocene arctic ecosystem was maintained by a higher rate of decomposition and nutrient turn-over where the coprophilous fauna was highly important.

The most favourable effect of the megaherbivores on insect diversity was the production of dung. With the extinction of the megafauna tons of dung was drawn off the arctic ecosystem, and the coprophilous fauna, consequently, must have been heavily reduced both with respect to species diversity and abundance. What arctic *Scathophaga* species made the woolly mammoth pats yellow? Is it to late to find out? Anyway, much research remains.

## Descriptions of the two new species

*Nanna indotatum* n.sp.

Diagnosis: Easily separated from most other *Nanna* species by lack of the short black spinulae of fore femur. Closely resembling *N. inermis* Becker but differing from that species by the following characters: Larger, about 4.0 mm, palpus club shaped, distinctly broadened apically. Second segment of arista (aristomere) not longer than broad. Legs darker and third tibia with three pairs of dorsal bristles (constant character?). *Pselaphephila loewi* Becker, also with unarmed fore femur and long clavate palpi, is usually included in *Nanna*. The male of *P. loewi* has the second aristomere distinctly prolonged.

There are also distinct genital differences between the three species.

**Description**:
*Male.*
Head: Rectangular, 1.3 times higher than long, black with anterior part of frons, face, cheek and jowl yellowish. Antennae black with the third segment 1.5 times as long as wide. Arista thickened in basal third. Four inclinate frontal bristles and two reclinate and one proclinate orbital bristles. Eyes rounded and slightly higher than broad.

Thorax: Black with grey pollinosity. Scutum with the normal bristles, i.e. two presutural and three postsutural dorsocentral one presutural and two intra-alar, two notopleural and two supra-alar bristles. Humerus with two bristles and behind with two posthumeral bristles. Scutellum with a pair of strong bristles and with two erect apical hairs. Propleural depression with fine hairs. Katepisternum with three setae, the posterodorsal strong, the ventral week. Anepisternum with a dorsal row of black bristles.

Wings: Hyaline. Vein R1 without hairs. Distance between crossveins r-m and m-cu one third of that between m-cu and wing margin. Veins R4+5 and M1 ending parallel, veins R2+3 and R4+5 diverging.

Legs: Dark, the basal part of tibiae and narrowly the knees yellowish. Coxae with yellowish hairs. All femurs with an irregular row of anterodorsal black setae and ventrally with yellowish hairlike bristles and hairs. Fore femur with some black posterodorsal bristles in the apical half. Mid and hind femur with a single preapical posterodorsal bristle. Fore and mid tibiae with one pair of seta (ad and pd), fore tibia further with an additional posterior seta, third tibia with tree pairs of setae.

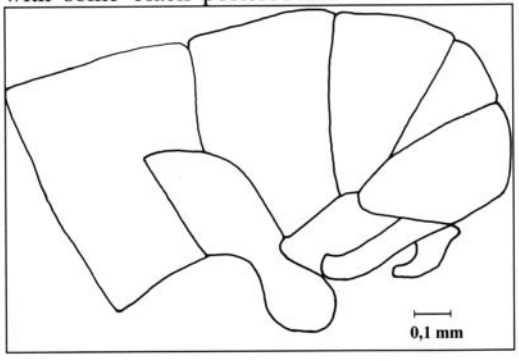


*Fig. 5. Male terminalia of* ***Nanna indotatum*** *n.sp., lateral view.*

*Bakkropp av hane av* ***Nanna indotatum*** *n.sp. sedd från sidan.*

Abdomen: With weak marginal bristles and whitish, soft hairs ventrally.

Terminalia: Of ordinary *Nanna* type (fig 5). Sternite 5 with spoon-shaped rounded lobes. Surstylus and cercus slender and of uniform width throughout.

*Female.*
Unknown.

Type material: Holotype male, Russia, Ayon island (69° 47´ N, 168° 34´ E) 20-21.VII.1994. (University of Lund, Department of Zoology, Division of systematics, Lund. Leg. S-A. Bengtson). Paratype male, Russia, Ayon island (69° 47´ N, 168° 34´ E) 20-21.VII.1994. (University of Lund, Department of Zoology, Division of systematics, Lund. Leg. S-A. Bengtson).

*Cochliarium sibiricum* n.sp.
Diagnosis:
A small, glossy black species with the following characters: first wing vein (R1) apically hairy; anterior part of humerus with black erect setulae and reduced number of scutal bristles; sternit 5 with small spinulose median lobes. The characters are valid for *Cochlerium* Becker and *Gymnomera* Rondani. However, all palaearctic *Gymnomera* species have yellow body colour and further more the cerci are fused medially forming an anal plate (concerning *G. melina* Becker only the female is known). The new species is easily separated from other *Cochliarium* species by the number of dorsocentral bristles and by genital carachters. I see no reason to establish a new genus.Traditional chaetotaxy is not very reliable for establishing generic limits in this family. The material is only two males, non of them in a very good state of preservation. A revision of this group to establish the generic taxonomy is of importance.

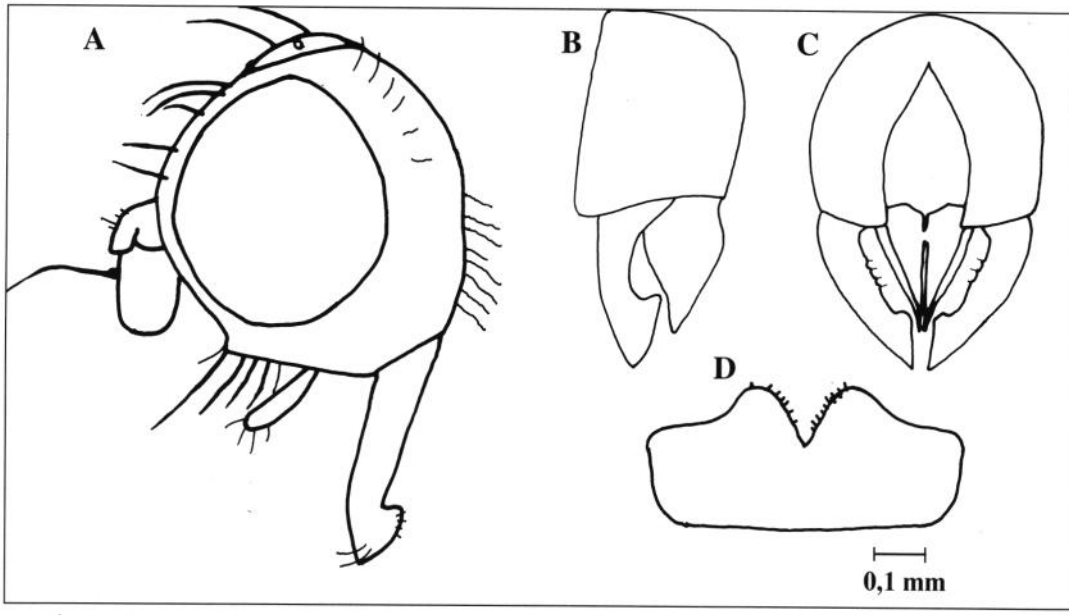


*Fig. 6. Details of* ***Cochliarium sibiricum*** *n.sp. A: head lateral view, B: male terminalia lateral view, C: male terminalia from behind, D: ventral lamella (sternite 5).*

*Detaljer av* ***Cochliarium sibiricum*** *n.sp. A: huvud sett från sidan, B: hanens bakkroppsspets från sidan, C: hanens bakkroppsspets sedd bakifrån, D: ventral lamella (sternit 5).*

**Description**:

*Male.*

Head: Rounded (Fig. 6), slightly higher than long, black with a brownish red spot on the anterior part of frons, gena with a yellow triangular spot. Three frontal bristles and two orbital bristles. Antennal segment 3 short, apically rounded. Antennal segment 2 brownish. Aristomere 3 thickend in basal third, pubescent. Aristomere 2 as long as broad. Palpus small, slightly clavate in the apical part.

Thorax: Acrostical and postsutural intra-alar bristles lacking. Two presutural and three postsutural dorsal bristles, the first postdorsal pair weak. Two humeral bristles. Propleural depression with fine hairs. Katepisternum with one strong seta. Anepisternum with one dorsal black bristle and several yellowish hairs. Scutellum with two pairs of bristles.

Legs: Dark, the basal part of fore tibia and the apical part of femur yellowish, mid and hind legs with the knees narrowly yellowish. Coxae with white hairs. Fore femur with a posterodorsal and a posteroventral row of hairlike bristles, mid and hind femurs with an anterodorsal and an anteroventral row of irregular weak bristles. Mid femur with a posterodorsal preapical curved bristle. Fore tibia with a posterior bristle, mid and hind tibiae with a minute anterodorsal bristles.

Abdomen: With weak marginal bristles.

Terminalia (see Fig. 6): Cerci rounded in a ventral position and only narrowly fused.

*Female.*

Unknown.

Type material: Holotype male. Russia. Wrangel Island (70°58´N, 179°34´E) 23-24.VII.1994. (University of Lund, Department of Zoology, Division of systematics, Lund. Leg. S-A. Bengtson). Paratype male. Russia Indigirka Delta. Lopatka (71°36´N, 148°15´E). 14-15.VII.1994. (University of Lund, Department of Zoology, Division of systematics, Lund. Leg. S-A. Bengtson).

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**Sammanfattning**

Sommaren 1994 gjordes en svensk-rysk vetenskaplig expedition med båt längs Rysslands arktiska kust. Vid ett antal stationer, 18 stycken, gick man i land för vetenskapliga undersökningar av tundraekosystemet. Bland annat gjordes insamling av insekter och andra organismer. Föreliggande artikel behandlar det insamlade materialet av kolvflugor (Scathophagidae). Insamlingen sköttes av Sven-Axel Bengtson och Christer Hansson från Lunds universitet och främst användes fallfällor och gulskålar.

Resultatet blev 565 individer fördelade på 20 arter. Huvuddelen av materialet (75%) utgjordes

av två arter, *Scathophaga furcata* och *S. varipes*. Antalet arter och individer för varje lokal är presenterat i Tab. 1. Två arter kunde ej identifieras till någon känd art och beskrivs därför som nya arter.

Mer än hälften av arterna har arktisk utbredning, en fjärdedel finns också i nordligt boreala områden och ett par arter har ännu vidare utbredning. En art är bunden till havssträndernas tångbälte.

Många av arterna är holarktiska och finns från Skandinavien till Nordamerika. Ett par arter är tidigare inte noterade från Ryssland (*Allomyella crinipes* och *Huckettia nearctica*) och ytterligare arter har fått sin utbredning väsentligt utökad. Av de insamlade arterna finns 13 också i Sverige. Att inte fler östliga arktiska arter nått Skandinavien torde bl.a. bero på att tundrazonen vid Pechora och Kolahalvön är så smal.

Artbildningen bland insekter tycks ha varit minimal under hela pleistocen. Insekterna har fått möta klimatfluktuationerna under glacial-interglacial-cyklerna med hög rörlighet för att hitta lämpliga levnadsmiljöer, vilket kan vara orsaken till många avvikande utbredningsbilder.

De arktiska ekosystemen under pleistocen måste ha haft en högre produktion som kunde bära en mångformig megafauna. Detta berodde på en högre omsättning i det arktiska kretsloppet där koprofila insekter och bland dem *Scathophaga*-arter spelade en stor roll. Är det relativt stora antalet *Scathophaga*-arter på tundran en rest av de dyngflugor som en gång levde på gödselhögarna efter ullhårig noshörning och mammut?

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# *Stipendier till yngre entomologer*

**Maria och Thure Palms uppländska stipendiefond, Mattias Idars stipendiefond, Frej Ossiannilssons stipendiefond samt Bertil Kullenberg-fonden.**

För ungdomar som är intresserade av insekter eller spindlar och som vill göra någon form av undersökning finns det möjlighet att söka pengar för material och resor ur ovanstående stipendiefonder. Ett krav för de två förstnämnda är att den sökande inte påbörjat forskarutbildning. Fonderna förvaltas av Entomologiska Föreningen i Uppland och ca 18 000 kr finns att fördela under 2000. Det du behöver göra är att skriva en ansökan, där det ska stå vad och hur du planerar att göra samt en kalkyl över vad det kommer att kosta. Efteråt vill föreningen ha en rapport om resultatet av undersökningen. Ansökan skickas till:

*Entomologiska Föreningen i Uppland*
*c/o Zoologiska Institutionen*
*Villav. 9, 752 36 Uppsala*

*Senaste datumet för ansökan är 30/4 - 2000.*

**Maria och Thure Palms minnesfond, Grillska fonden samt Överbys fond**

Flera stipendier på tillsammans ca 10 000 kr kan sökas av framför allt yngre entomologer men även av doktorander eller motsvarande.

Stipendierna är avsedda för ett självständigt arbete rörande insekter. Noggrann plan erfordras rörande entomologiska undersökningen vartill medel söks. Kostnadskalkyl skall biofogas, liksom också yttrande över eleven från handledare, lärare i naturvetenskap eller motsvarande. Om medel söks från annat håll skall även detta anges.

Eventuella frågor kan besvaras av sekreteraren Urban Wahlstedt, tel. 08 - 532 571 31.

Ansökan inlämnas till föreningen senast den 1 maj 2000 under adress:

*Entomologiska föreningen*
*Naturhistoriska riksmuseet*
*Box 50007, 104 05 Stockholm.*